

3/9/8 (Item 2 from file: 9)
DIALOG(R) File 9:Business & Industry(R)
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01960952 (THIS IS THE FULLTEXT)

Manufacturing: Key Word: Integration

(Manufacturers and their suppliers, distributors, and retailers use the Internet to share real-time information about amount of product needed and sold)

Information Week, p 223+

September 22, 1997

DOCUMENT TYPE: Journal; Ranking ISSN: 8750-6874 (United States)

LANGUAGE: English RECORD TYPE: Fulltext

WORD COUNT: 2380

ABSTRACT:

The use of information technology by manufacturers and their suppliers, distributors and retailers is discussed in the full-text article. The companies are ranked by the size of their 1997 information technology budgets.

TEXT:

By Tom Stein

Third-party apps for supply chain and sales enhance ERP systems FOR TOP manufacturing companies, enterprise resource planning systems play a critical role in improving outdated infrastructures, gaining tighter control over internal operations, and driving down costs. Manufacturers are also turning their attention beyond factory walls. By implementing third-party applications, such as supply-chain and sales-force automation systems, they aim to better connect with customers and business partners, and to further boost the bottom line.

Today, the big trend among manufacturers is the "expansion of their ERP systems by integrating with supply-chain and front-office software," says Harry Tse, research director with the Yankee Group, a consulting firm in Boston. "Companies are looking to these applications to streamline their activities."

photo omitted

One example is Steelcase Inc., a \$3 billion maker of office furniture in Grand Rapids, Mich. For manufacturing operations, Steelcase made a \$15 million investment in an enterprise system from German enterprise-applications vendor SAP, which it began implementing three years ago. Before that, Steelcase had relied on its own customized applications. "This customization route was taking too long and costing too much," says Steelcase CIO Mark Greiner. "We knew we had to look at an integrated ERP system."

But while SAP's R/3 system addresses day-to-day order fulfillment and the processes required to build products, until recently, it didn't tackle such things as supply-chain management and customer service. That led Steelcase to build its own applications for managing customer relationships, says Greiner. "We think we have always been able to make higher-quality furniture than any other manufacturer," he says. "Now we realize it's not just how well we make the stuff, but how we sell it."

A Word Wide Web application lets Steelcase's sales associates and distributors connect with one another and share critical information. "We have just posted our product playbook in a secure online environment," explains Greiner. "Our sales force and dealers can look at the play-book and exchange information about our new products over the Internet."

Owens Corning Inc. is another manufacturing company that is integrating multiple systems and expanding its ERP system's capabilities. Known primarily as the maker of pink fiberglass insulation, the Toledo, Ohio, company has added a host of new products to become a complete supplier of home building materials.

As part of the manufacturing makeover, Owens Corning has made about 16 acquisitions in the past two years. But with each acquisition came old legacy IT systems and disparate applications.

That led Owens Corning to standardize on SAP's R/3 suite. "We did not have an infrastructure that would allow us to operate as a global company and one that would let our customers look at us as a single company," explains Mike Radcliff, CIO of Owens Corning. "Since Owens sells a variety of products, customers would have to contact different departments to get different things."

But now, thanks to SAP's new ATP (available to promise) module, Owens has a single point of contact for all product lines. "With our old system, we didn't know what inventory we had in stock," says Radcliff. "We would have to check around and get back to the customer. With ATP, we can see what inventory is available, when it will be produced, and who is the lowest-cost carrier. We can commit to the customer before we hang up the phone. That used to take multiple steps; now it takes one phone call."

Owens Corning, with nearly \$4 billion in revenue, began its SAP implementation two years ago and now has some 40 manufacturing sites live on the software. The company's overall budget for the reengineering project is about \$100 million--a figure that includes software, hardware, development, and training. But thanks to productivity gains engendered by the new system, Owens expects to save approximately \$50 million annually, or 1% of total sales.

The biggest challenge has been "assimilating the magnitude of the changes in a short time," elaborates Radcliff. About 10,000 people within Owens will be involved in the reengineering effort, and, he says, many are using new information technology. "Just about everybody's role in the organization has changed, and that demands that people learn new skills. But ultimately, the change in our company has brought better ways of working and has introduced new relationships with our customers."

Now that the company uses SAP as its backbone, Owens Corning is also looking for applications that can be readily plugged into the R/3 system, such as supply-chain functionality from Numetrix Ltd. and Manugistics Inc. "We look for technology suppliers that we believe will have complementary relationships with each other," says Radcliff.

Steelcase also plans to integrate third-party software with R/3 to fill other gaps in the SAP system. For instance, "our sales-force apps need to be linked to the SAP mother ship," says Greiner. Steelcase is investigating applications from Oracle. Now, the company uses customized tools that let salespeople **display** products on their notebooks in a 3-D environment. "This helps customers visualize the products and kick the tires," explains Greiner.

photo omitted

Another area in which Steelcase needs help is the supply chain. "We found SAP is weak with the scheduling of plant operations," says Greiner. "SAP focuses on make-to-stock, but we are make-to-order." To provide this functionality, Steelcase is working with supply-chain vendor i2 Technologies Inc. of Irving, Texas, whose technology will integrate with the R/3 suite.

"We ask SAP to find the applications they are missing and integrate them into their own system," says Greiner. "If something breaks, we want to be able to deal directly with SAP." Greiner hopes that SAP will establish a similar relationship with Manugistics, in Rockville, Md., for such functions as transportation management and load scheduling. All told, Steelcase expects to spend \$60 million to \$90 million on new systems over the next three to five years. "In the past, we were doing things inefficiently," says Greiner. "We believe we can achieve an \$80 million reduction in operating expenses just by getting rid of redundant processes and cleaning up our data."

Steelcase also developed a **Web** site that's generating about 80,000 hits per week, says Greiner. Customers can learn about Steelcase products by browsing an online catalog. Soon they will also be able to check the status of their orders, among other functions. "This is the way customers want to talk to you and the way you will want to market to them," says Greiner. "The **Web** browser has become the universal language for connecting with the world."

Every Component Considered

Cargill Corp., a \$56 billion manufacturer of everything from cornmeal to steel, is another example of a company using information technology to prepare itself for the 21st century. "Over a period of three years, we conducted a rationalization study where we considered every **component**," says Lloyd Taylor, corporate VP of IT at Cargill, in Minneapolis. "We selected about 20 different packaged applications that would fit all our plants."

The company had no choice but to update its IT infrastructure. "The computing model here was not functionally robust, and the technology was from the 1970s," Taylor admits. "Now we are playing catch-up." One example: The company had 16 E-mail systems, which often made it impossible to send certain Microsoft Word documents and interoffice memos electronically. "We ripped everything out, and now we have a common set of desktop applications, including cc:Mail and Lotus Notes," says Taylor.

photo omitted

At the high end of its setup, Cargill is using Maximo from Project Software Development Inc. in Cambridge, Mass., for plant maintenance. The company also runs supply-chain applications from Numetrix, in Toronto, and from Manugistics. At the heart of Cargill's new IT infrastructure is a manufacturing, logistics, and inventory management package from QAD Inc. in Carpinteria, Calif.

The challenge for Cargill is integrating these disparate systems. The company has turned to another vendor, Hewlett-Packard, for help. "They have 'switchware,' or what we call a common message transfer service, that lets you move data from one app to another and from one database to another fairly seamlessly," Taylor says.

Manufacturing companies are discovering that the price of modernizing their systems is high. But the price of not modernizing may be higher, while the rewards, it seems, are worth every penny.

TECHNOLOGY CLOSE-UP

Legend for Chart:

- A - RANK
- B - COMPANY
- C - IT BUDGET (1997)
- D - IT BUDGET (1996)
- E - IT EMPLOYEES
- F - YEAR 2000 READY
- G - % OUTSOURCING
- H - % INTERNET
- I - SELLING IN **WEB**
- J - PROCUREMENT ON **WEB**

| | A | B | C | D | E | F |
|----|---|----------------------|---|-----------------|--------|-----|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| 4 | | General Motors Corp. | | | | |
| | | \$4,000,000,000 | | \$4,000,000,000 | | |
| | | -- | | -- | | |
| 27 | | Ingersoll Rand Co. | | | | |
| | | -- | | -- | | |
| | | 10% | | 2%-3% | | |
| 33 | | Cargill Inc. | | | | |
| | | \$277,000,000 | | \$263,000,000 | | |
| | | | | | <2,000 | 70% |

| | | | | |
|-----|---------------------------------|-------------------|--------|---------|
| | 15% | <5% | Y | Y |
| 46 | Parker Hannifin Corp. | | | |
| | \$82,000,000 | \$76,000,000 | <1,000 | 80% |
| | 5% | -- | N | Y |
| 56 | Corning Inc. | | | |
| | \$185,000,000 | \$34,000,000 | 500 | 50% |
| | 25% | 10% | N | N |
| 69 | Science Applications Int. Corp. | | | |
| | \$30,000,000 | \$29,000,000 | 500 | 70% |
| | 10% | 10% | Y | Y |
| 76 | Deere & Co. | | | |
| | \$300,000,000 | \$280,000,000 | 1,500 | 90% |
| | 5% | 3% | N | N |
| 90 | Chrysler Corp. | | | |
| | \$400,000,000 [*] | \$350,000,000 [*] | 950 | 70% |
| | 10%-20% | 1%-5% | N | -- |
| 95 | PPG Industries Inc. | | | |
| | \$85,000,000 | \$80,000,000 | 525 | 20% |
| | 15% | 2% | N | Y |
| 100 | Stone Container Corp. | | | |
| | \$33,000,000 | \$35,000,000 | 250 | 45% |
| | 15% | 1% | N | N |
| 124 | Caterpillar Inc. | | | |
| | \$430,000,000 | \$395,000,000 | 2,600 | 60%-75% |
| | 10% | 11% | N | N |
| 125 | Genuine Parts Co. | | | |
| | \$33,000,000 | \$35,000,000 | 500 | 50% |
| | 10% | 1% | N | Y |
| 127 | Cummins Engine Co. Inc. | | | |
| | -- | -- | 500 | 75% |
| | 20% | 10% | N | N |
| 141 | Eastman Kodak Co. | | | |
| | \$500,000,000 | \$500,000,000 | 2,000 | -- |
| | -- | -- | Y | N |
| 148 | Tyco International Ltd. | | | |
| | \$45,000,000 | \$35,000,000 | 500 | 20% |
| | 5% | 1% | Y | N |
| 153 | Aeroquip-Vickers Inc. | | | |
| | \$38,600,000, | \$32,400,000 | 235 | 60% |
| | 5% | 1% | N | N |
| 158 | 3M Corp. | | | |
| | \$427,000,000 [*] | -- | 2,700 | 10% |
| | 10% | 10% | Y | Y |
| 171 | General Signal Corp. | | | |
| | \$45,000,000 | \$30,000,000 | 200 | 60% |
| | 5% | 2% | Y | N |
| 187 | Snap-On Inc. | | | |
| | \$29,500,000 | \$27,000,000 | 132 | 90% |
| | 15% | 5% | N | N |
| 187 | Snap-On Inc. | | | |
| | \$29,500,000 | \$27,000,000 | 132 | 90% |
| | 15% | 5% | N | N |
| 201 | Echlin Inc. | | | |
| | \$31,000,000 [*] | \$41,000,000 | <500 | 76% |
| | 15% | 1% | Y | Y |
| 203 | Avery Dennison Corp. | | | |
| | \$68,000,000 | \$65,000,000 | 450 | 80% |
| | 15% | 5% | Y | Y |
| 207 | Owens Corning Inc. | | | |
| | \$89,000,000 | \$84,000,000 | 180 | >95% |
| | 55% | <1% | Y | Y |
| 214 | Dresser Industries Inc. | | | |
| | \$60,000,000 | \$57,000,000 | 432 | 80% |
| | 7% | 1% | N | Y |
| 219 | Bermis Co. Inc. | | | |
| | \$29,000,000 | \$24,000,000 | 125 | 70% |
| | 30% | 5% | N | Y |
| 248 | Timken Co. | | | |
| | \$50,000,000 | \$49,100,000 | 250 | 65% |

| | | | | |
|-----|-----------------------------|-----------------|------|---------|
| | 14% | 1% | N | N |
| 249 | Harsco Corp. | | | |
| | \$7,500,000 | \$10,000,000 | 80 | 90% |
| | 10% | 30% | Y | Y |
| 250 | GATX Corp. | | | |
| | \$69,000,000 | \$56,000,000 | 257 | 60% |
| | 10% | <1% | N | N |
| 261 | Gold Kist Inc. | | | |
| | \$11,000,000[*] | \$6,000,000 | 55 | 50% |
| | 5% | -- | N | N |
| 306 | Amsted Industries Inc. | | | |
| | \$8,900,000 | \$8,300,000 | 81 | 30% |
| | 4% | <1% | N | Y |
| 317 | Menasha Corp. | | | |
| | \$24,000,000 | \$21,000,000 | 120 | 50% |
| | 40% | 1% | N | Y |
| 318 | America Standard Cos. Inc. | | | |
| | \$80,000,000 | \$60,000,000 | -- | 50% |
| | 25% | -- | -- | -- |
| 326 | Black & Decker Corp. | | | |
| | \$83,500,000[*] | \$71,000,000[*] | 400 | 25% |
| | 3% | 1% | N | N |
| 337 | Steelcase Inc. | | | |
| | \$65,000,000 | \$55,000,000 | 280 | 30% |
| | 10%-15% | 5% | N | N |
| 343 | Crown Cork & Seal Co. Inc. | | | |
| | \$20,000,000 | \$15,000,000 | 250 | 50% |
| | 5% | 2% | N | N |
| 355 | Burlington Industries Inc. | | | |
| | \$39,300,000[*] | \$37,600,000[*] | 400 | 50%-60% |
| | 3% | 0% | N | N |
| 369 | Magnatek Inc. | | | |
| | \$20,000,000 | \$12,000,000 | 110 | 80% |
| | 4% | <1% | N | N |
| 376 | Standard Register Co. | | | |
| | \$35,000,000 | \$25,000,000 | 190 | 15%-20% |
| | 0% | 2%-5% | Y | N |
| 378 | Kaman Corp. | | | |
| | \$25,000,000 | \$20,000,000 | -- | 90% |
| | 0% | 40% | N | Y |
| 383 | Day & Zimmerman Inc. | | | |
| | \$15,000,000 | \$14,000,000 | 126 | --% |
| | 15% | 15% | N | Y |
| 399 | Teradyne Inc. | | | |
| | \$15,000,000 | \$15,000,000 | 150 | 90% |
| | 20% | 10% | N | N |
| 402 | Arvin Industries Inc. | | | |
| | \$13,000,000 | \$12,000,000 | 60 | 25% |
| | 5% | 5% | N | N |
| 413 | Leggett & Platt Inc. | | | |
| | \$18,000,000 | \$14,000,000 | 75 | 25% |
| | 0% | 0% | N | Y |
| 435 | York International Corp. | | | |
| | \$25,400,000 | \$24,000,000 | 200 | 45% |
| | 15%-20% | 10% | Y | Y |
| 455 | Varian Associates Inc. | | | |
| | \$18,100,000 | \$17,400,000 | 210 | 50% |
| | 15% | 5% | N | Y |
| 459 | United Stationers Inc. | | | |
| | \$44,000,000 | \$38,000,000 | 175 | 60% |
| | 1% | 1%-3% | N | N |
| 473 | Herman Miller Inc. | | | |
| | -- | \$34,000,000 | <200 | 10% |
| | 1% | -- | N | N |
| 478 | Sundstrand Corp. | | | |
| | -- | -- | 190 | 50% |
| | 5% | 2% | Y | N |
| 491 | Duchoissois Industries Inc. | | | |
| | \$4,900,000 | \$4,800,000 | 29 | 50% |

| | | | | |
|-----|-------------------|--------------|----|-----|
| | 3% | 3% | N | N |
| 495 | Printpack Inc. | | | |
| | \$8,000,000 | \$8,000,000 | 50 | 75% |
| | 6% | 5% | N | N |
| 500 | Purina Mills Inc. | | | |
| | \$8,000,000 | \$12,000,000 | 60 | 10% |
| | -- | 5% | Y | Y |

* Company-provided estimates based on IT budget as a percentage of revenue. Year 2000 Ready is company-estimated percentage of software code that is year 2000 compliant. % Outsourcing is percentage of company's IT budget spent on outsourced projects. % Internet is percentage on online initiatives. Selling on Web : Company is selling products and services thorough its Web site (handling the actual transaction online and placing orders, but not necessarily payment). Procurement on Web : Company is procuring supplies or materials over the Internet. Industry companies not listed declined to participate in the informationWeek survey. Missing information was not provided by surveyed companies.

INDUSTRY SNAPSHOT

BUSINESS AND TECHNOLOGY TRENDS

- * Third-party applications, such as supply-chain and sales-force-automation systems, allow manufacturers to better connect with customers and business partners .
- * Manufacturers and their suppliers, distributors, and retailers use the Internet and other technologies, such as bar-code scanner data, to share real-time information about how much product they need to make and how much they have sold.
- * Continued installation of enterprise resource planning (ERP) software allows companies to gain more control of internal operations and drive down factory costs.
- * % REVENUE SPENT ON IT: 1.8%
- * IT SPENDING PER EMPLOYEE: \$4,541
- * EMPLOYEES DEDICATED TO IT: 1.2%
- * % IT BUDGET FOR ONLINE INITIATIVES: 5.7%
- * % IT BUDGET FOR OUTSOURCING: 10.7%
- * YEAR 2000-COMPLIANT CODE: 55%
- * APPS ACCESSIBLE ONLINE: 10%
- * COMPANIES THAT SELL ONLINE: 30%
- * COMPANIES THAT PROCURE ONLINE: 42%

BASED ON 58% OF IW 500 MANUFACTURERS

DATA: INFORMATIONWEEK

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SPECIAL FEATURES: Table

INDUSTRY NAMES: Automotive; Industrial machinery; Paper products
 PRODUCT NAMES: Furniture and fixtures (250000); Paper mills (262000);
 Manifold business forms (276000); Stone, clay, and glass products
 (320000); Industrial machinery and equipment (350000); Ball and roller
 bearings (356200); Electronic and other electric equipment (360000);
 Motor vehicles and equipment (371000); Measuring, analyzing, and
 controlling instruments and related products (380000); Manufacturing

industries, other (390000)

CONCEPT TERMS: All company; All market information; All product and service information; Applications; Capital expenditures; Labor relations; Trends

GEOGRAPHIC NAMES: North America (NOAX); United States (USA)

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